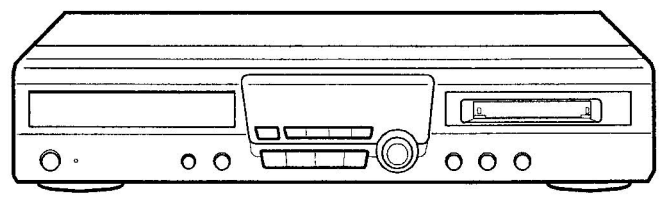
SERVICE MANUAL

ORION

Minidisc Recorder/
Compact Disc Component Hifi

MDC-201
MD-190



ORIGINAL
CHASSIS CODE A

SPECIFICATIONS

CD PLAYER

System:	Compact Disc digital audio system
Laser:	Semiconductor laser
Frequency response:	4 to 20,000Hz
S/N (Signal-to-noise) ratio:	85dB
Wow and flutter:	Below measurable limit

MD RECORDER

System:	MiniDisc digital audio system
Recording system:	Magnetic field modulation overwrite system
Laser:	Semiconductor laser
Recording time:	74 minutes max. (74 minutes MiniDisc)
Error correction:	Advanced Cross Interleave Reed Solomon Code (ACIRC)
Sampling frequency:	44.1kHz
Coding:	Adaptive Transform Acoustic Coding (ATRAC)
Modulation system:	EFM (Eight-to-Fourteen Modulation)
Number of channels:	2 channels (stereo)
Frequency response:	4 to 20,000Hz
S/N (Signal-to-noise) ratio:	85dB or more
Wow and flutter:	Below measurable limit

GENERAL

Power source:	AC230V ~ 50Hz
Power consumption:	14W (standby 4W)
Input Level:	2.2V, 47kΩ
Output Level:	2.2V, 1kΩ
Weight:	3.6kg
Dimensions:	430 (W) x 87 (H) x 257 (D) mm

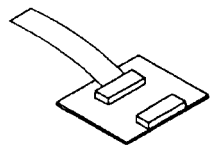
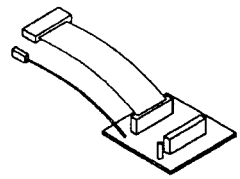
TABLE OF CONTENTS

CAUTION A-1
SERVICING NOTICES ON CHECKING A-1
HOW TO ORDER PARTS A-1
DISASSEMBLY INSTRUCTIONS B-1, B-2
PRINTED CIRCUIT BOARDS
OPERATION1 ..... C-1, C-2
MAIN/POWER/OPERTATION2 ..... C-3~C-6
BLOCK DIAGRAM D-1, D-2
BLOCK DIAGRAM(Power Block) D-3, D-4
INTERCONNECTION DIAGRAM E-1, E-2
SCHEMATIC DIAGRAMS
HEAD AMP/CD DRIVE E-3, E-4
DSP E-5, E-6
AUDIO/IN/OUT E-7, E-8
POWER/OPERATION2 ..... E-9, E-10
MICON/OPERATION1 ..... E-11, E-12
WAVEFORMS F-1, F-2
MECHANICAL EXPLODED VIEW G-1
MECHANICAL REPLACEMENT PARTS LIST H1-1
ELECTRICAL REPLACEMENT PARTS LIST H2-1, H2-2

Best. Nr. SM201

Design and specifications are subject to change without notice.

SERVICING FIXTURES AND TOOLS

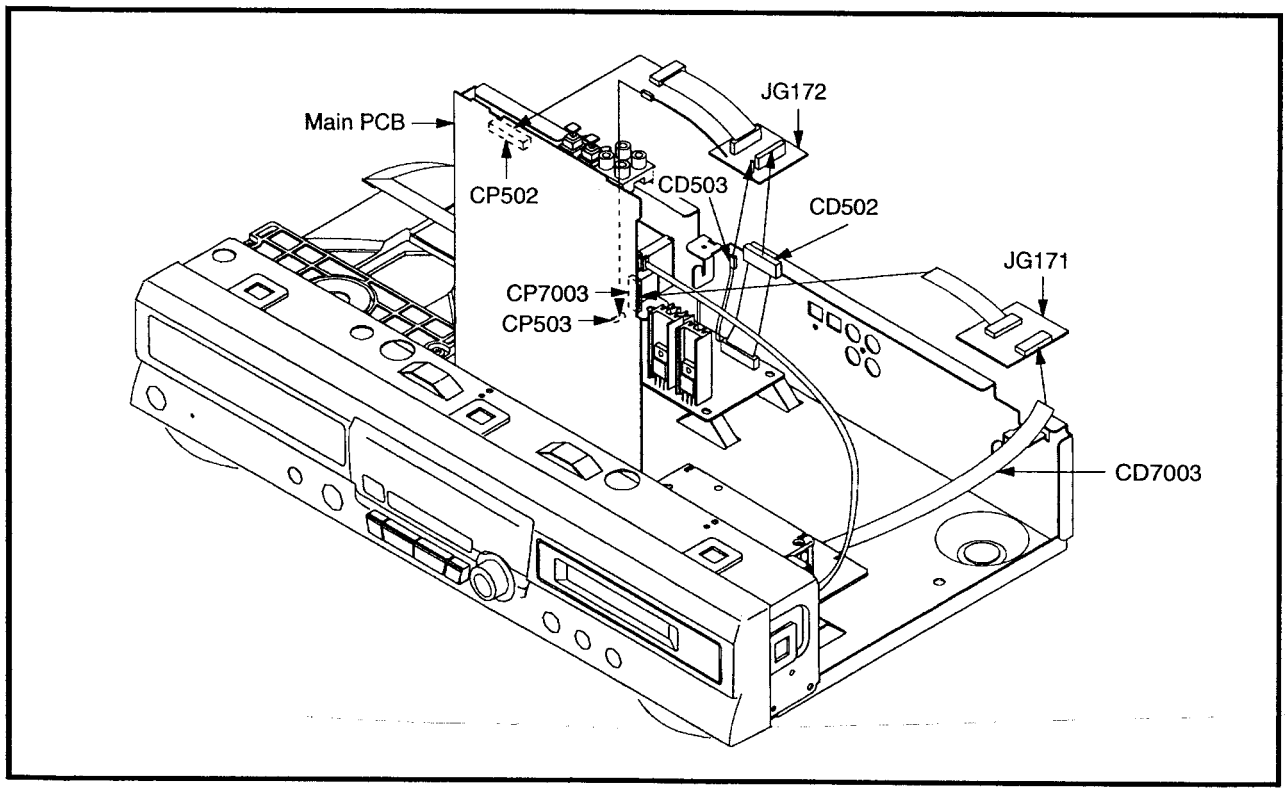
JG171 Cable	JG172 Cable
	

Part No.	Remarks
JG171	Used to connect the MAIN PCB and MD DECK
JG172	Used to connect the MAIN PCB and POWER PCB

PREPARATION FOR SERVICING

How to use the Servicing Fixture

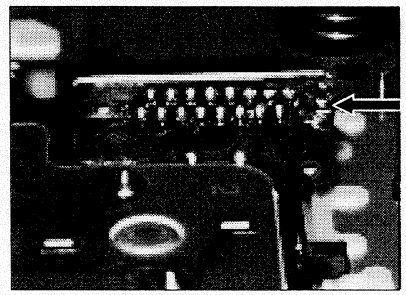
1. Remove the 3 screws which are used for holding the Main PCB.
2. Disconnect the following connectors: (CP7003, CP502 and CP503).
3. Connect as shown in the below figure using the Service Fixture.
   - Connect the Main PCB to the MD Deck with the cable JG171.
   - Connect the Main PCB to the Power PCB with the cable JG172.



CAUTION

- **MiniDisc and CD Deck incorporates a Laser. Invisible laser radiation when open those. Avoid exposure to beam.**

- **When you disconnect the Flat Cable (CD4003) between the Main PCB and CD Deck, short circuit with solder on the indicated point of Pick PCB. Unless you do not short circuit, the Pick part of the CD Deck may be damaged.**



Back of CD Deck

SERVICING NOTICES ON CHECKING

1. KEEP THE NOTICES

As for the places which need special attentions, they are indicated with the labels or seals on the cabinet, chassis and parts. Make sure to keep the indications and notices in the operation manual.

2. USE THE DESIGNATED PARTS

The parts in this equipment have the specific characters of incombustibility and withstand voltage for safety. Therefore, the part which is replaced should be used the part which has the same character.
Especially as to the important parts for safety which is indicated in the circuit diagram or the table of parts as a ⚠ mark, the designated parts must be used.

3. PUT PARTS AND WIRES IN THE ORIGINAL POSITION AFTER ASSEMBLING OR WIRING

There are parts which use the insulation material such as a tube or tape for safety, or which are assembled in the condition that these do not contact with the printed board. The inside wiring is designed not to get closer to the pyrogenic parts and high voltage parts. Therefore, put these parts in the original positions.

4. PERFORM A SAFETY CHECK AFTER SERVICING

Confirm that the screws, parts and wiring which were removed in order to service are put in the original positions, or whether there are the portions which are deteriorated around the serviced places serviced or not. Check the insulation between the antenna terminal or external metal and the AC cord plug blades. And be sure the safety of that.

HOW TO ORDER PARTS

Please include the following informations when you order parts. (Particularly the CHASSIS CODE.)

1. MODEL NUMBER and CHASSIS CODE
   The MODEL NUMBER can be found on the back of each product and the CHASSIS CODE can be found at the end of the SERIAL NUMBER.
2. PART NO. and DESCRIPTION
   You can find it in your SERVICE MANUAL.

DISASSEMBLY INSTRUCTIONS

CAUTION: BEFORE ATTEMPTING TO REMOVE OR REPAIR ANY PCB, UNPLUG THE POWER CORD FROM THE AC SOURCE.

1-1: TOP CABINET AND MAIN PCB (Refer to Fig. 1-1)

1. Remove the 5 screws ①.
2. Remove the Top Cabinet.
3. Disconnect the following connectors: (CP7002, CP4001, CP7003, CP7004, CP502 and CP503).
   Do not disconnect the Flat Cable (CD4003) between the Main PCB and CD Deck.
4. Remove the 3 screws ②.
5. Remove the 2 screws ③.
6. Remove the Main PCB.

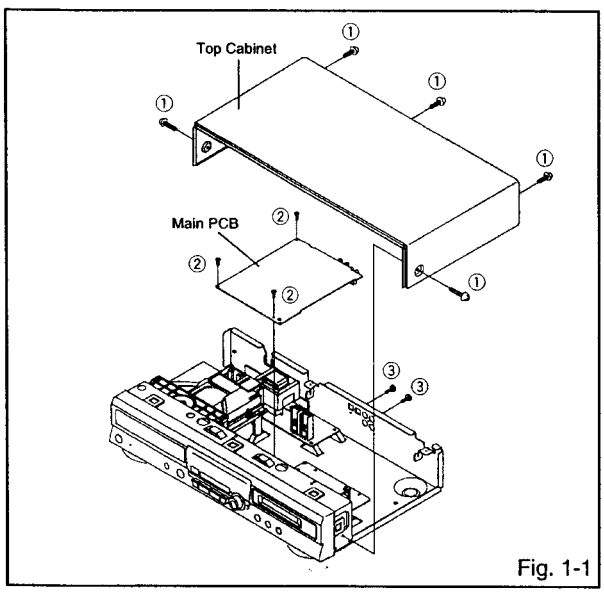


Fig. 1-1

1-2: FRONT CABINET AND TOP ANGLE (Refer to Fig. 1-2)

1. Unlock the 7 supports ① and remove the Front Cabinet.
2. Remove the 3 screws ②.
3. Remove the screw ③.
4. Remove the Top Angle.

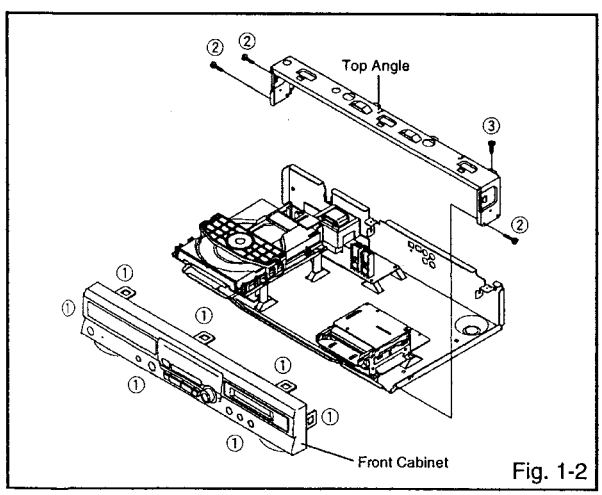


Fig. 1-2

1-3: CD DECK (Refer to Fig. 1-3)

1. Remove the 6 screws ①.
2. Remove the CD Deck.
3. Short circuit with solder on the Pick PCB of the CD Deck. (Refer to CAUTION on the page A-1)
4. Disconnect the CP4003.

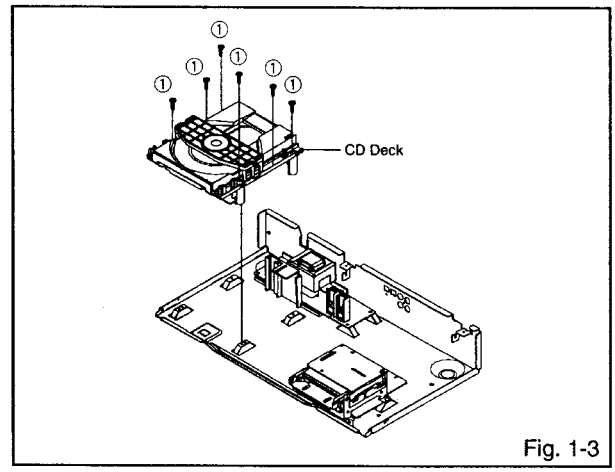


Fig. 1-3

1-4: MD DECK (Refer to Fig. 1-4)

1. Remove the 4 screws ①.
2. Remove the MD Deck.

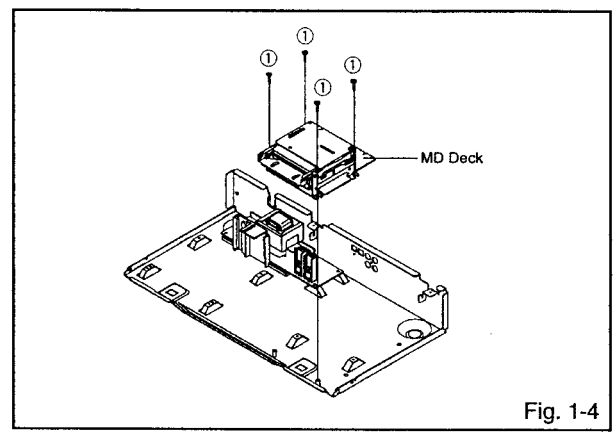


Fig. 1-4

DISASSEMBLY INSTRUCTIONS

1-5: POWER PCB AND TRANS HOLDER
(Refer to Fig. 1-5)

1. Remove the 2 screws ①.
2. Remove the screw ②.
3. Remove the Power PCB and Trans Holder.

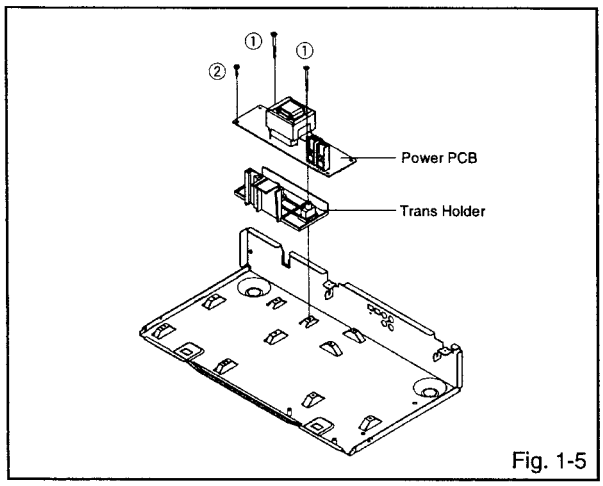


Fig. 1-5

1-6: OPERATION 1, 2 PCB (Refer to Fig. 1-6)

1. Remove the 9 screws ①.
2. Remove the 2 screws ②.
3. Remove the Operation 1, 2 PCB.

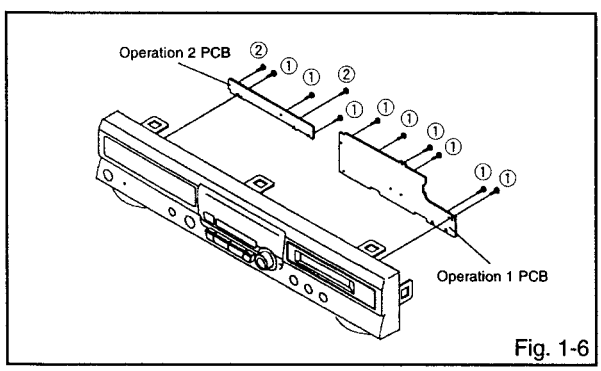
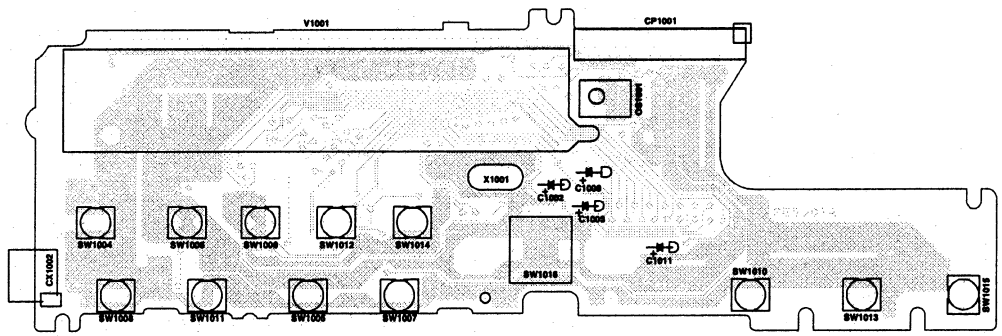


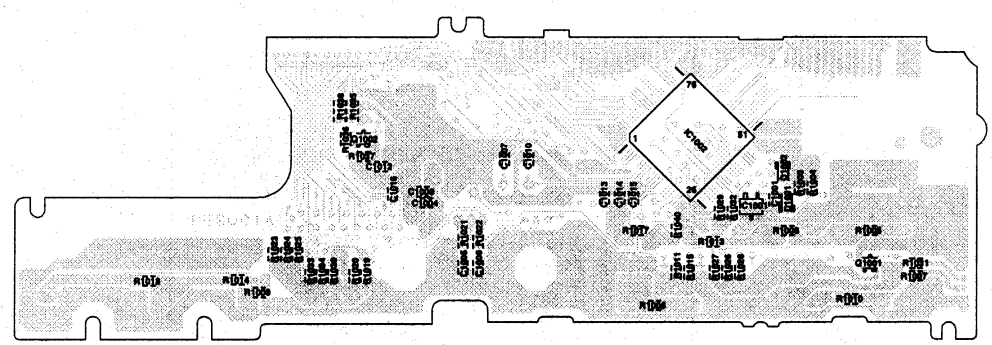
Fig. 1-6

PRINTED CIRCUIT BOARDS
OPERATION1

TOP

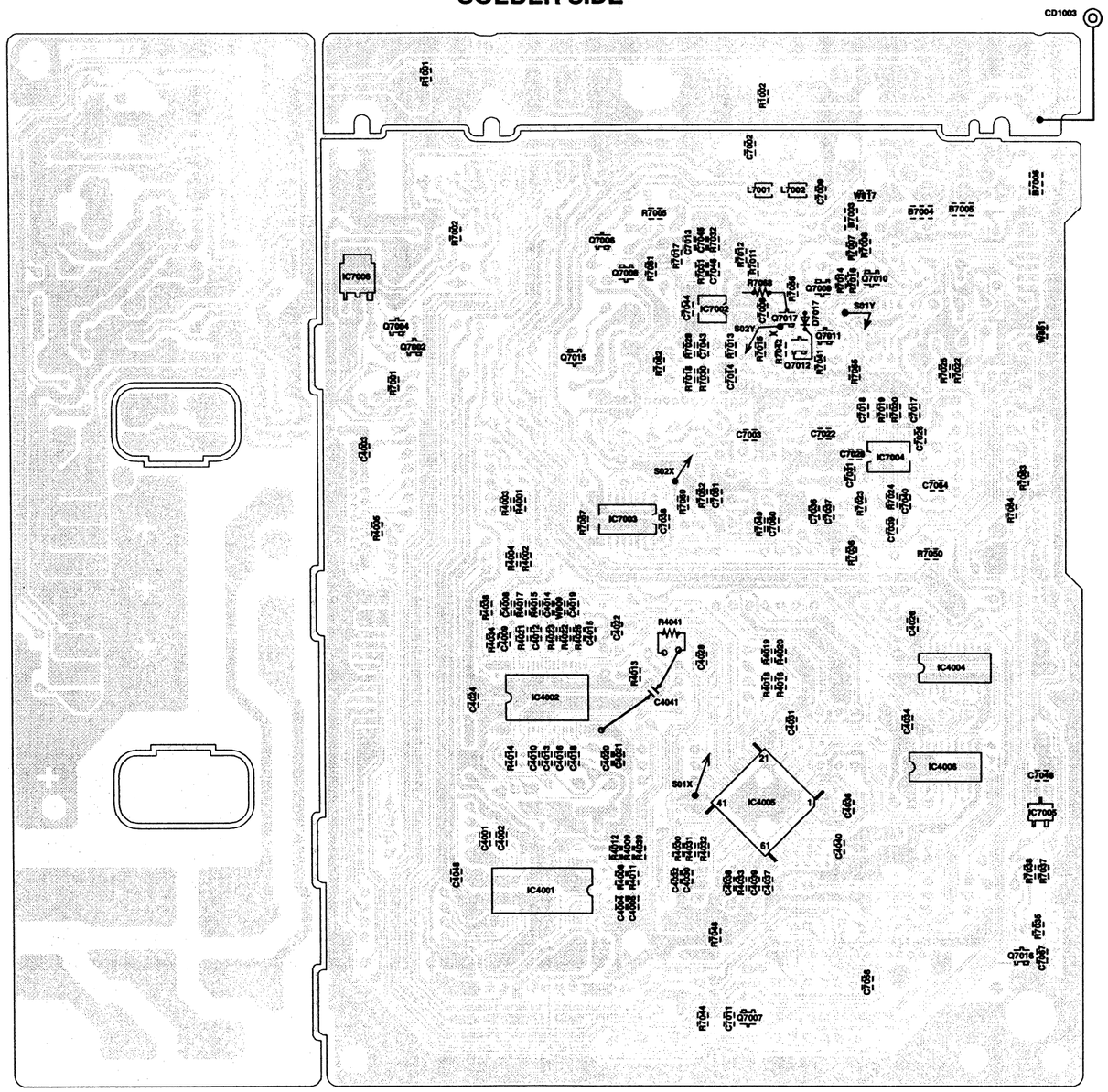


BOTTOM

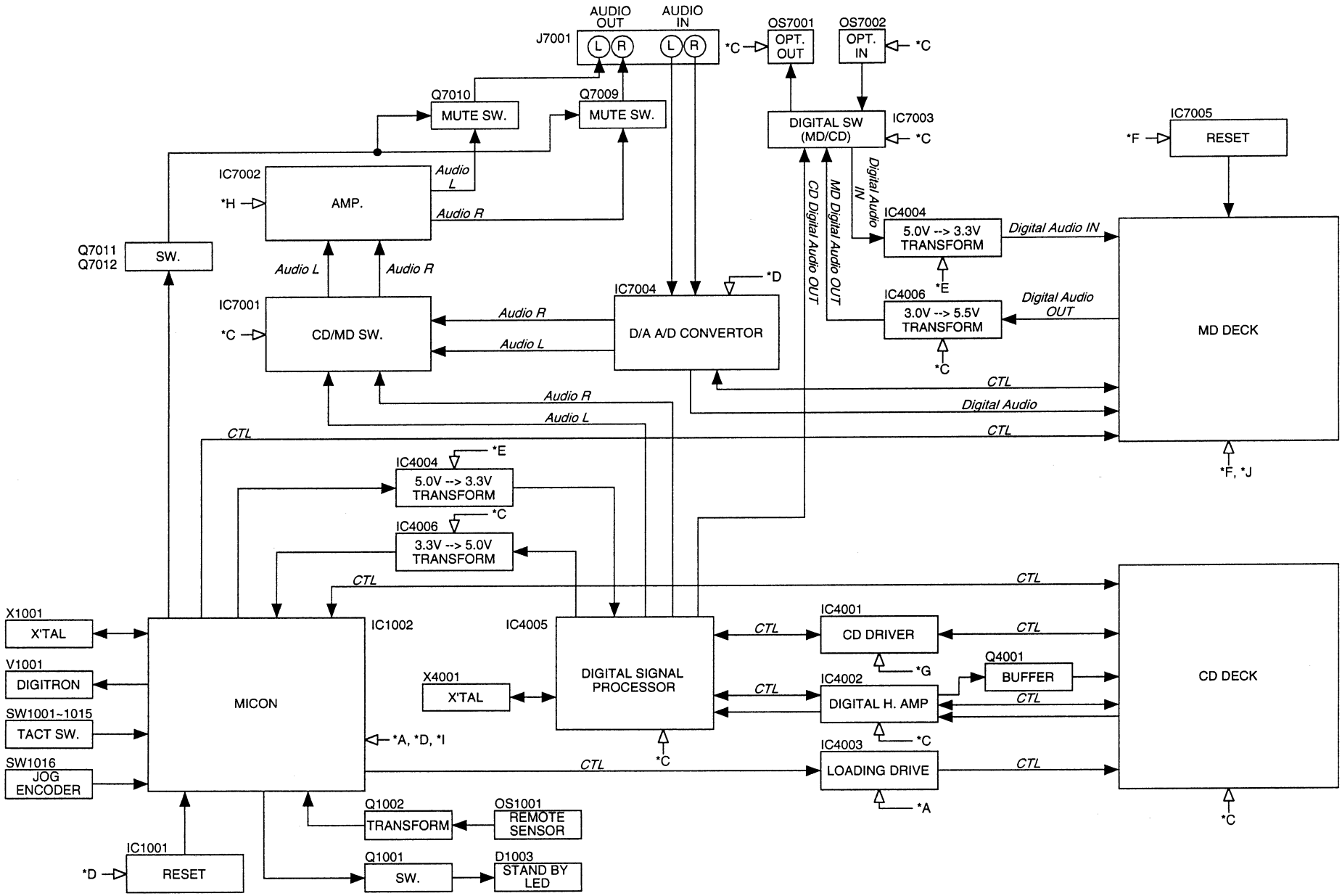


PRINTED CIRCUIT BOARDS

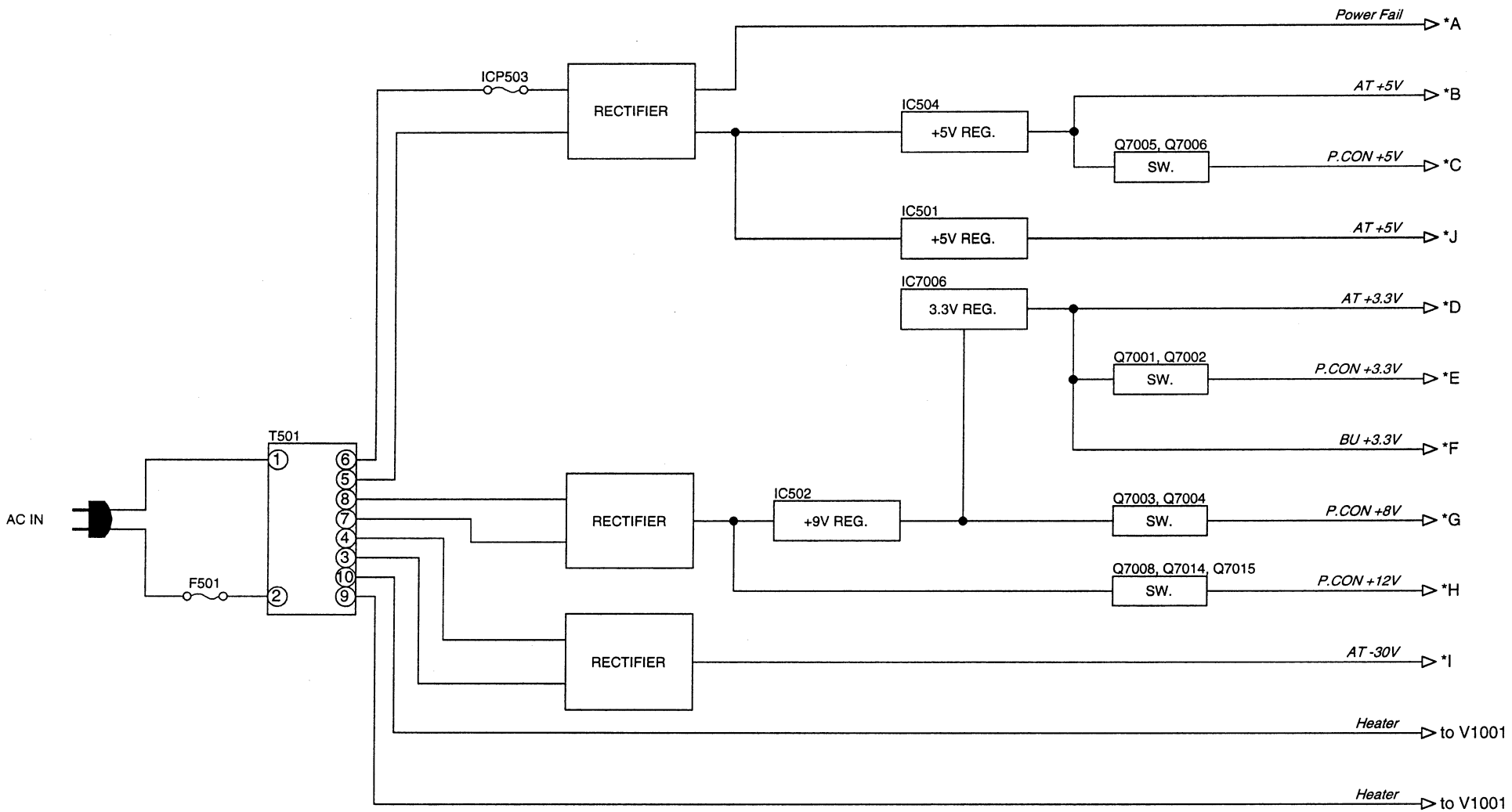
MAIN/POWER/OPERATION2
SOLDER SIDE



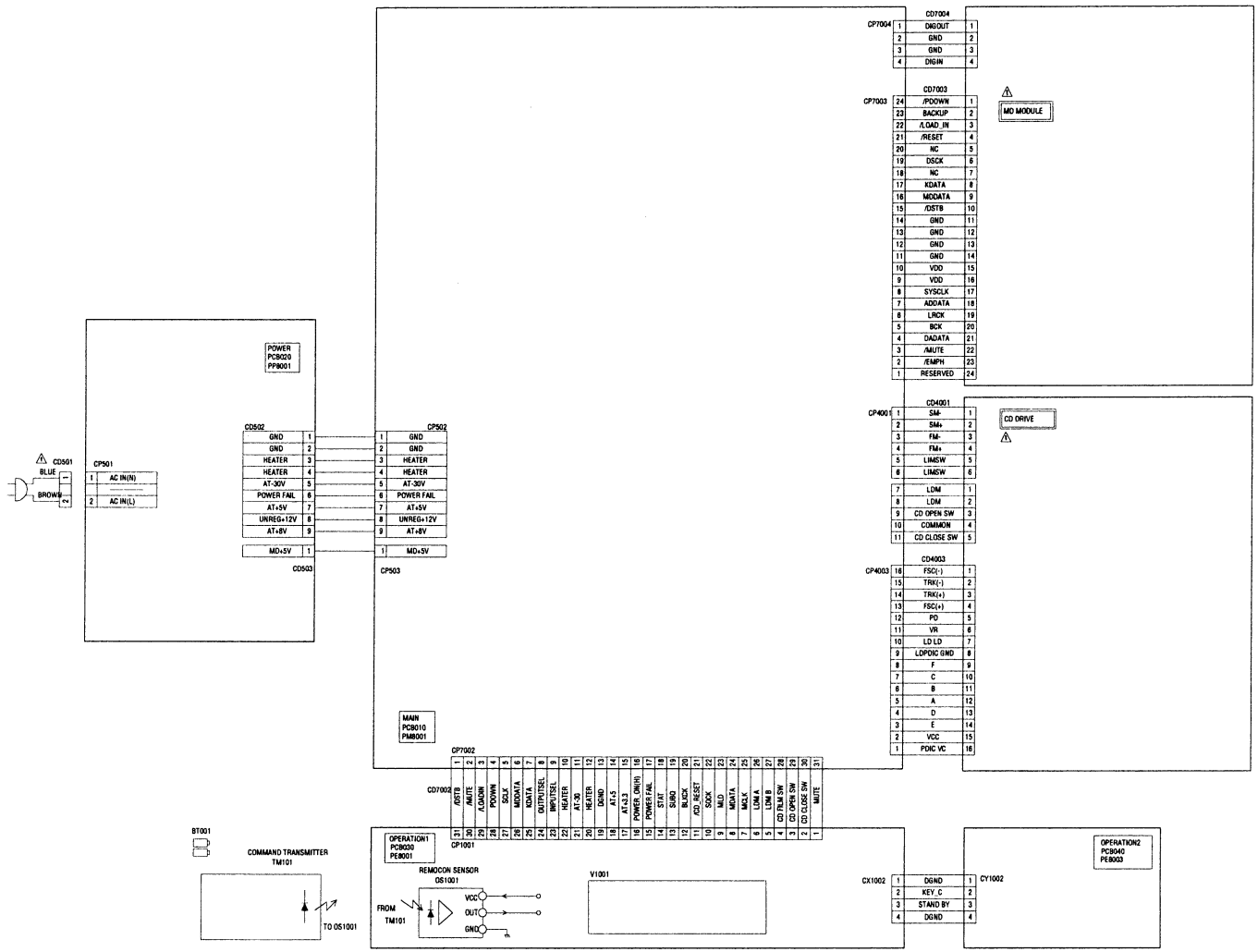
BLOCK DIAGRAM



BLOCK DIAGRAM (Power Block)



INTERCONNECTION DIAGRAM

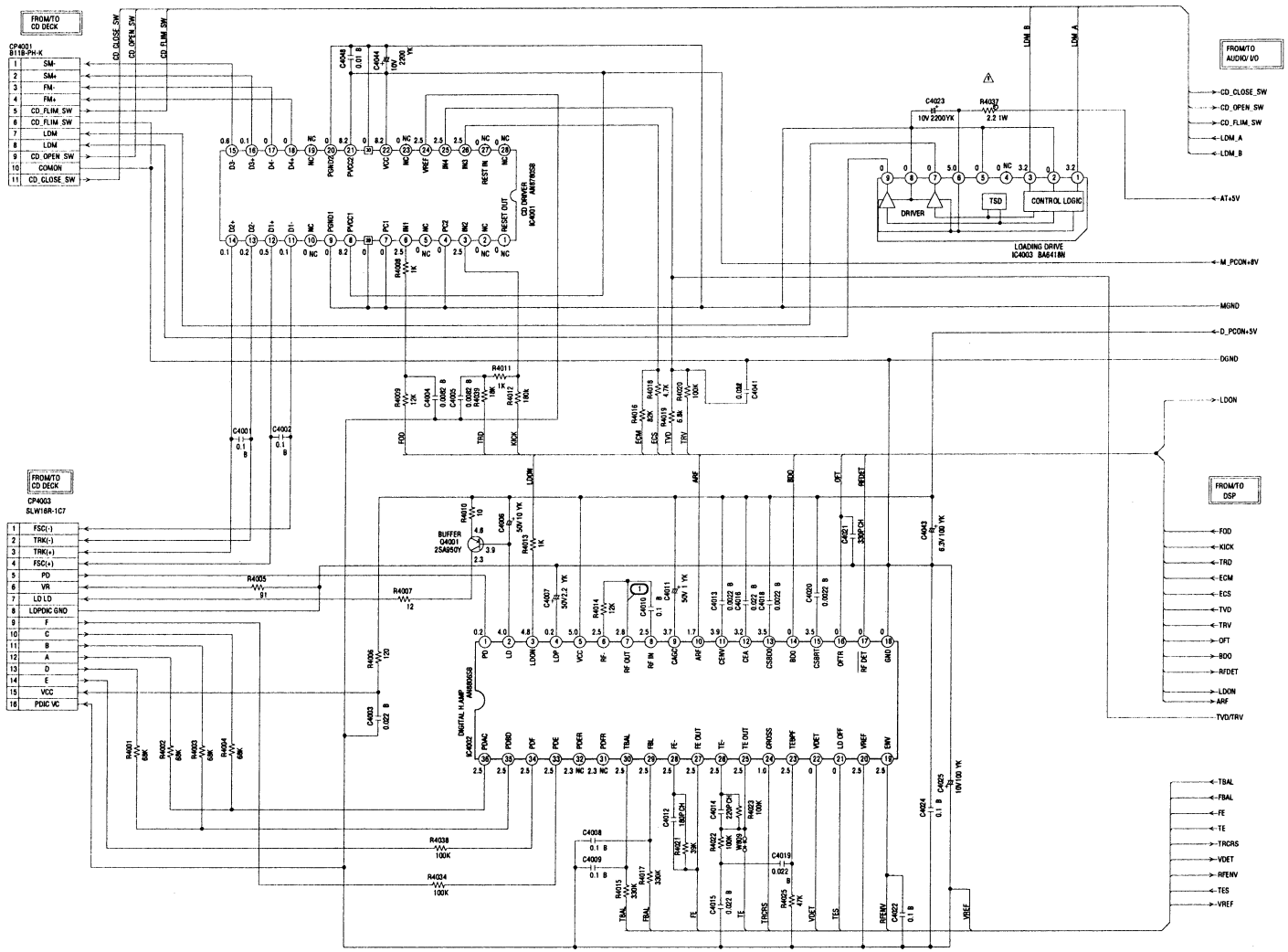


CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY,USE ONES DESCRIBED IN PARTS LIST ONLY .

ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES.

NOTE: THIS INTERCONNECTION DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE .

HEAD AMP/CD DRIVE SCHEMATIC DIAGRAM



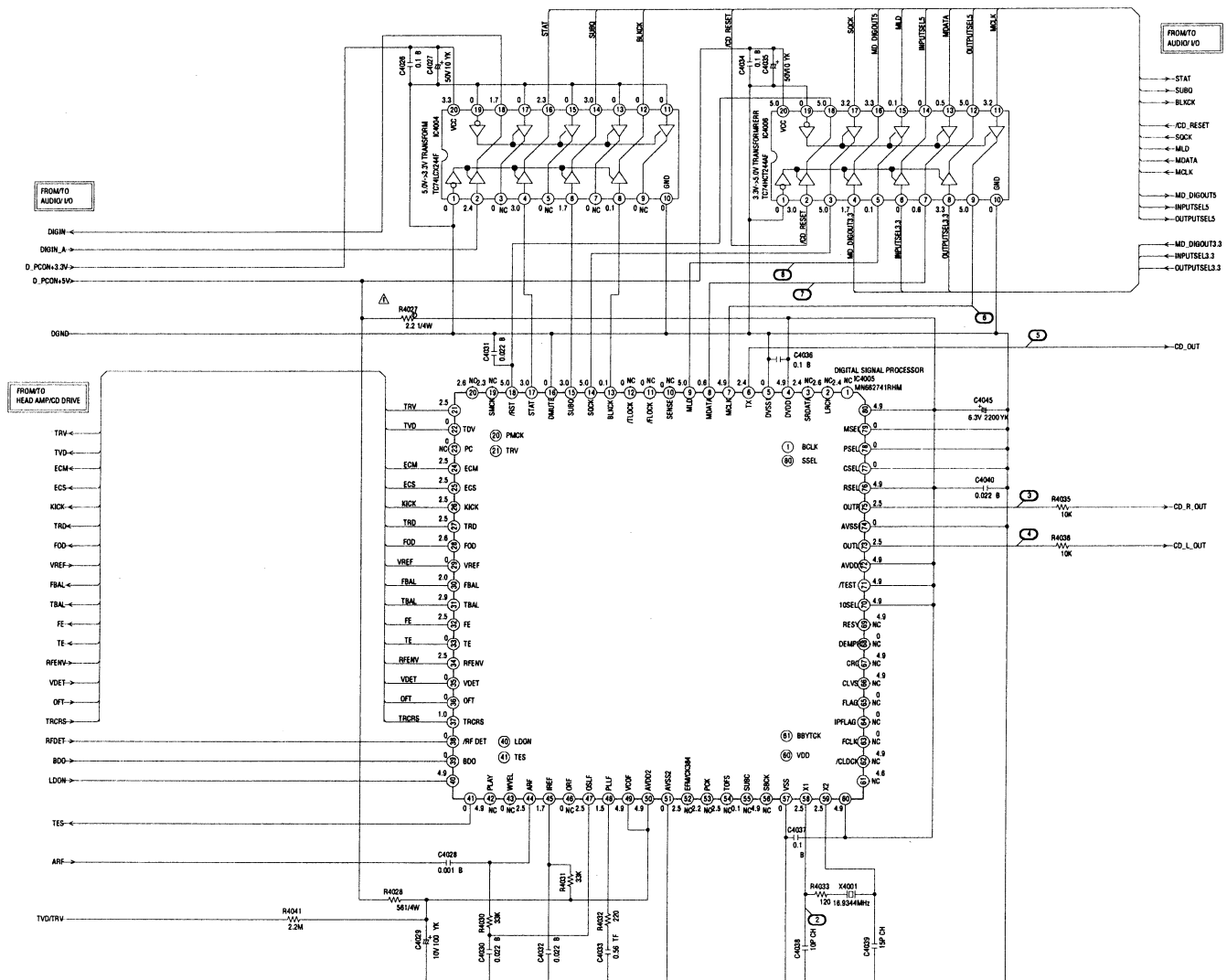
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY .

ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE .

DSP SCHEMATIC DIAGRAM



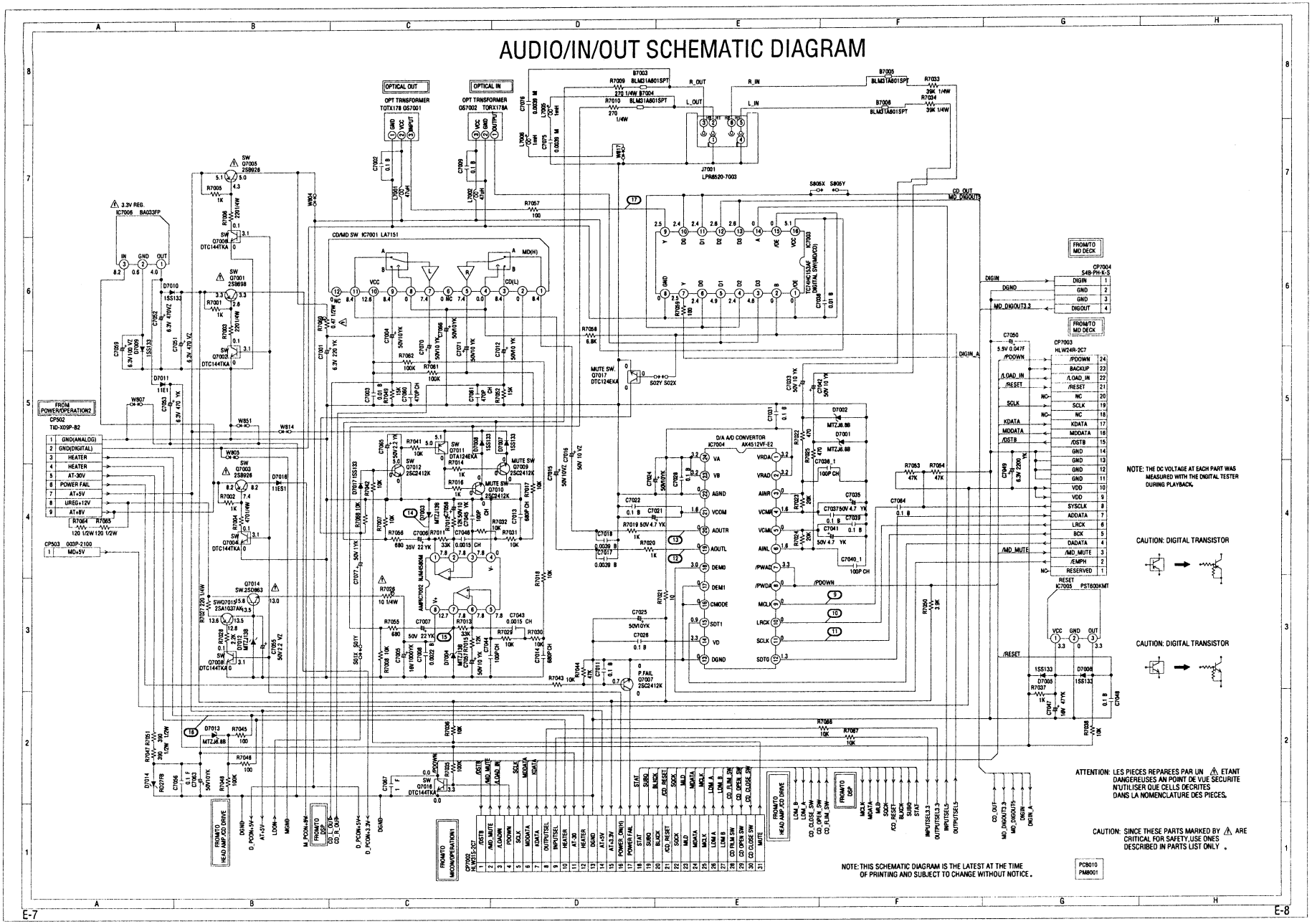
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY .

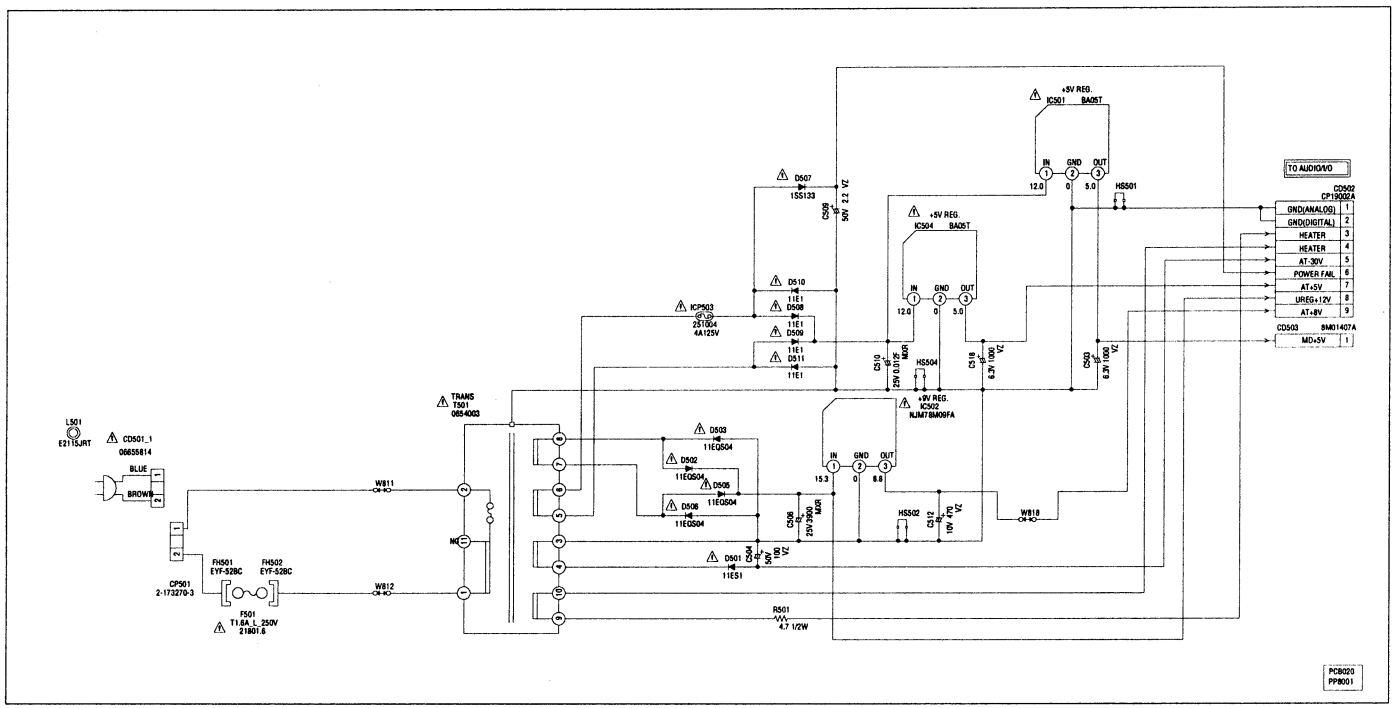
ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES.

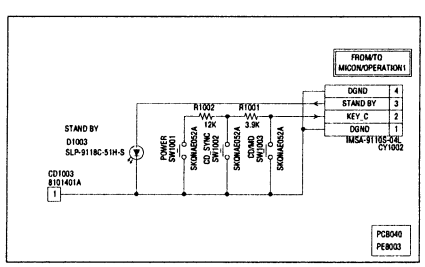
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE .

AUDIO/IN/OUT SCHEMATIC DIAGRAM


OPTICAL OUT
OPTICAL IN
OPT TRANSFORMER TOTX178 QS7001
OPT TRANSFORMER QS7002 TORX178A
J7001 LPR8520-7003
CD/MD SW IC7001 LA7151
D/A A/D CONVERTOR IC7004 AK4512VF-E2
IC7005 PST600KMT
IC7006 BA033FP
CP7003 HLW24R-2C7
CP7004 S4B-PH-K-S
CP7002 HLW15-2C7
CP502 TID-X09P-B2
CP503 003P-2100
FROM/TO MD DECK
FROM/TO HEAD AMP,CD DRIVE
FROM/TO DSP
FROM/TO MICOM(OPERATION)
FROM/TO POWER/OPERATION2
CD_OUT
MD_DIGOUT
MUTE SW. Q7017 DTC124EKA
P.FAIL Q7007 2SC2412K
SW Q7005 2SB926
SW Q7001 2SB698
SW Q7002 DTC144TKA
SW Q7003 2SB926
SW Q7004 DTC144TKA
SW Q7008 DTC144TKA
SW Q7011 DTA124EKA
SW Q7012 2SC2412K
MUTE SW Q7009 2SC2412K
MUTE SW Q7010 2SC2412K
Q7014 SW.2SD863
Q7013 2SA1037AK
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.
CAUTION: DIGITAL TRANSISTOR
CAUTION: DIGITAL TRANSISTOR
ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES.
CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY .
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.
PCB010
PM8001

POWER/OPERATION 2 SCHEMATIC DIAGRAM





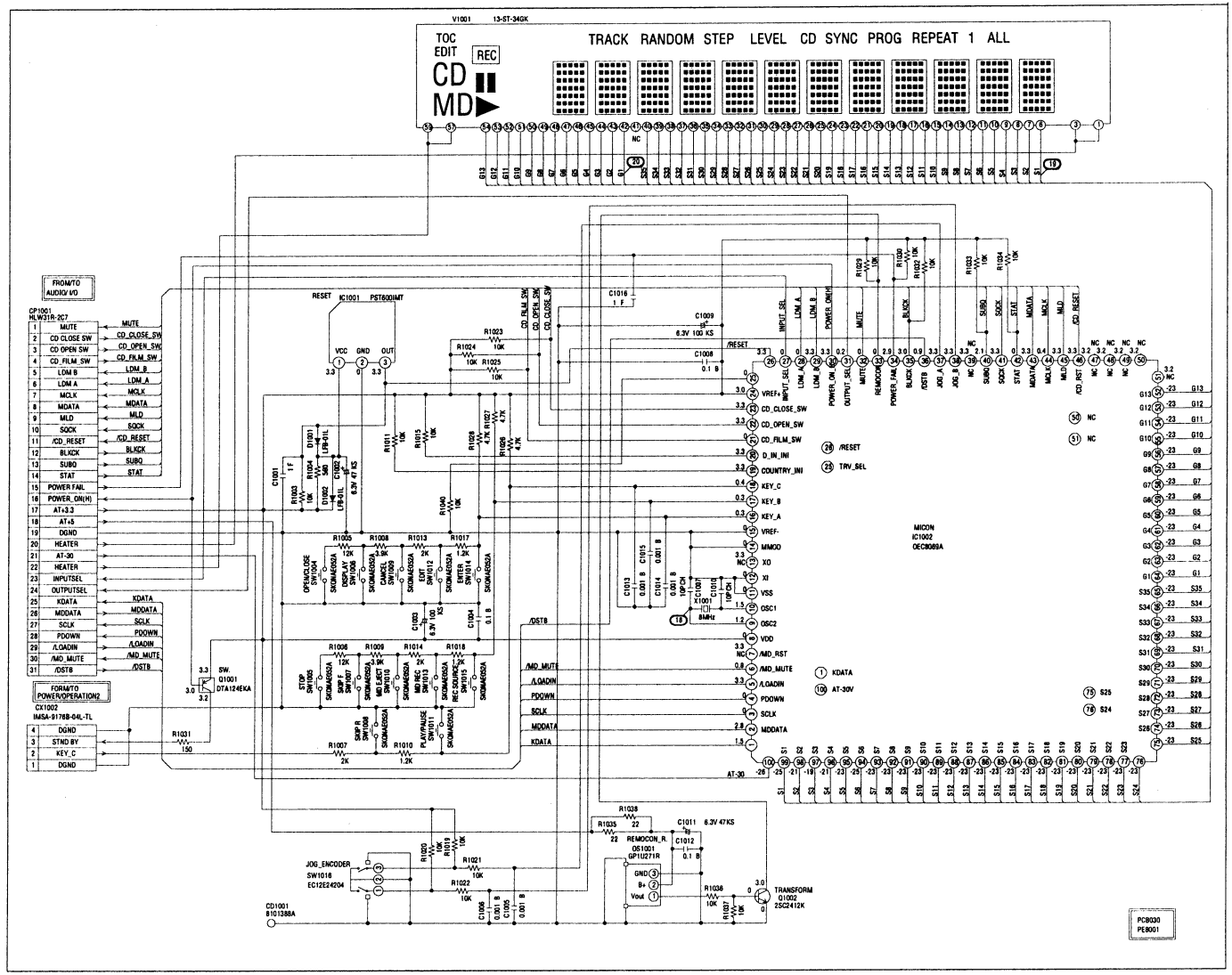
ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES.

CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY,USE ONES DESCRIBED IN PARTS LIST ONLY .

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE .

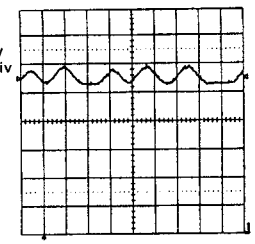
MICON/OPERATION 1 SCHEMATIC DIAGRAM



WAVEFORMS

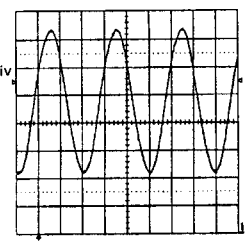
HEAD AMP/CD DRIVE SCHEMATIC DIAGRAM

① 0.50V 1μs/div

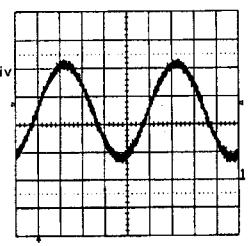


DSP SCHEMATIC DIAGRAM

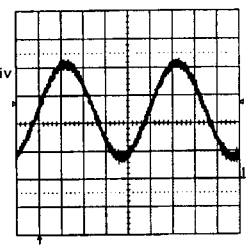
② 0.50V 20ns/div



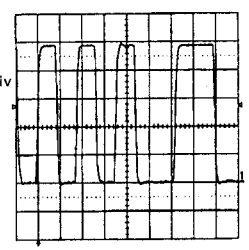
③ 1.00V 0.2ms/div



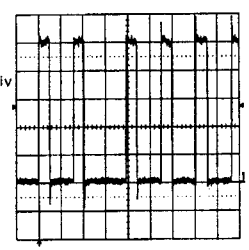
④ 1.00V 0.2ms/div



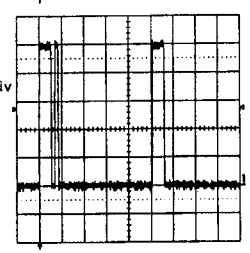
⑤ 1.00V 0.2μs/div



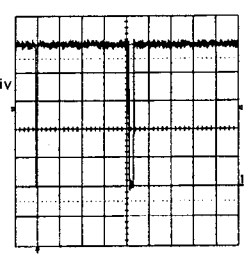
⑥ 1.00V 10μs/div



⑦ 1.00V 0.1ms/div



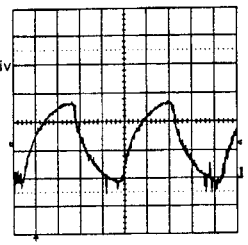
⑧ 1.00V 50μs/div



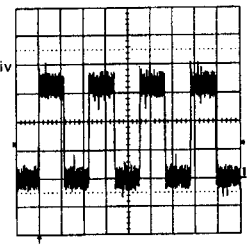
NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

AUDIO/IN/OUT SCHEMATIC DIAGRAM

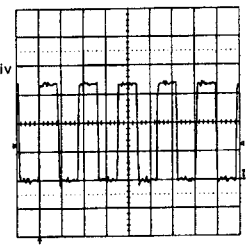
⑨ 1.00V 20ns/div



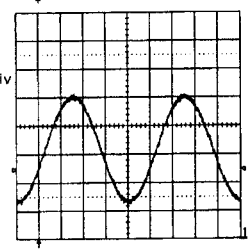
⑩ 1.00V 10μs/div



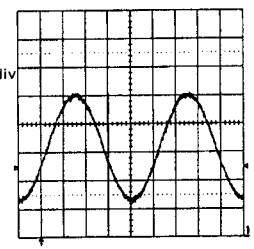
⑪ 1.00V 0.2μs/div



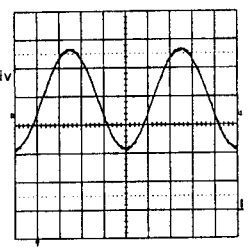
⑫ 0.50V 0.2ms/div



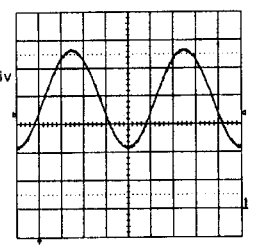
⑬ 0.50V 0.2ms/div



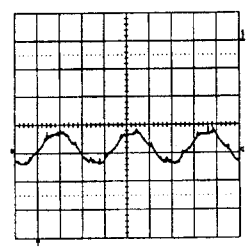
⑭ 2.00V 0.2ms/div



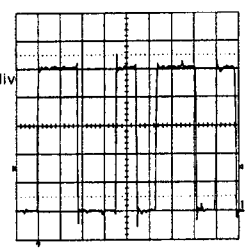
⑮ 2.00V 0.2ms/div



⑯ 5.0V 5ms/div

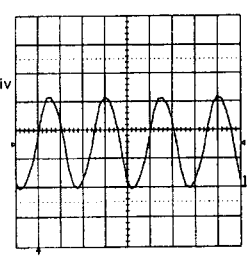


⑰ 1.00V 0.2ms/div

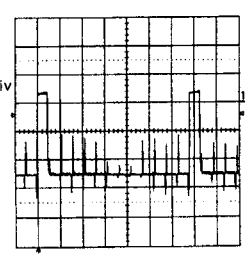


MICON/OPERATION1 SCHEMATIC DIAGRAM

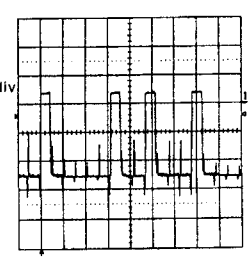
⑱ 1.00V 50ns/div



⑲ 10.0V 0.5ms/div

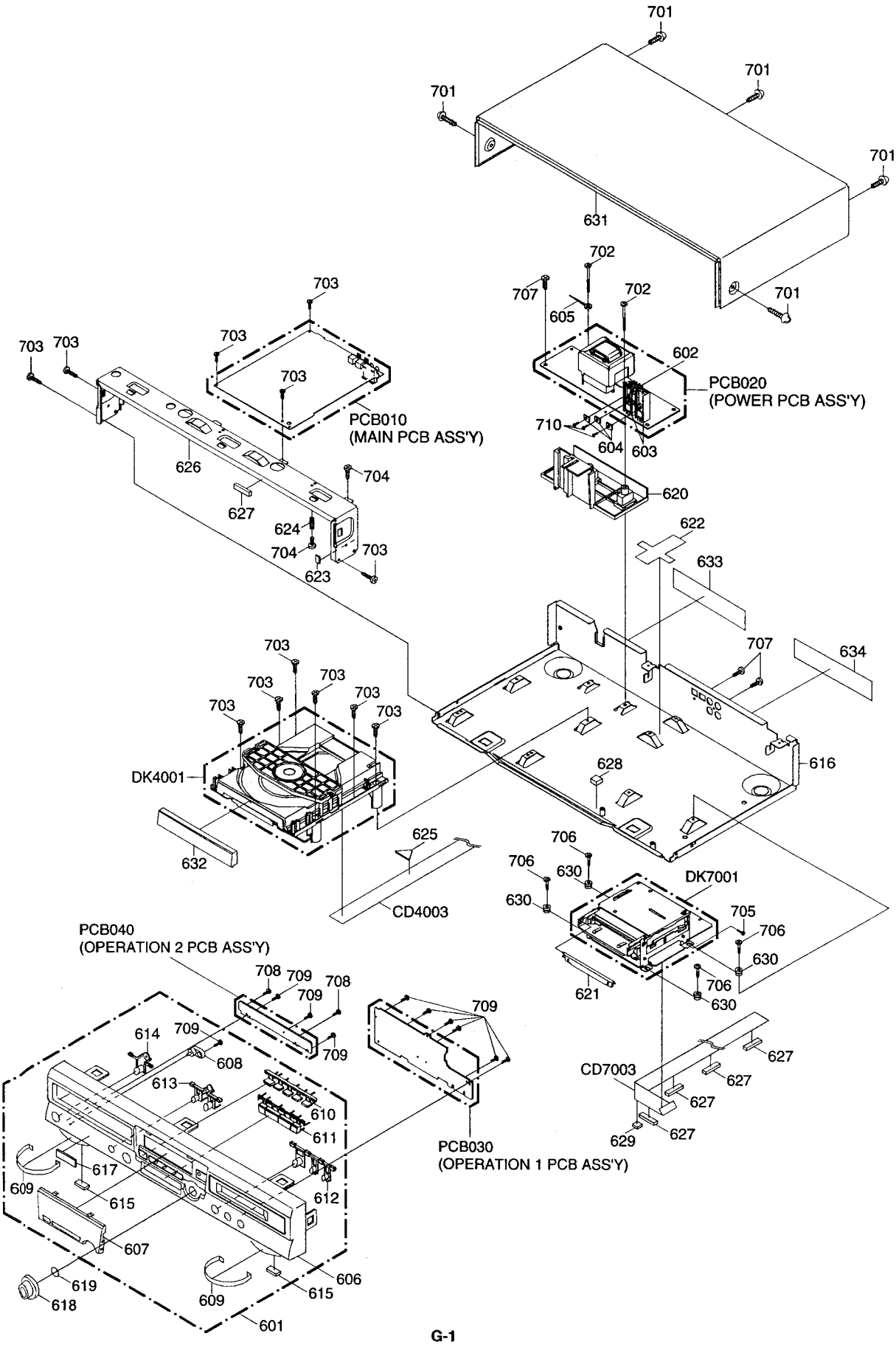


⑳ 10.0V 0.5ms/div



NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

MECHANICAL EXPLODED VIEW



MECHANICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	
601	A11003A720	CABINET,FRONT ASS'Y	
602	---	HEAT SINK	
603	---	HEAT SINK	
604	---	METAL SPACER	
605	899P450000	CORD CLAMP NO.P-45	
606	701JPJ0919	CABINET,FRONT	
607	711JPD0119	PLATE,DISPLAY	
608	713JPA0178	GLASS,LED	
609	7230006751	SHEET,LEG	
610	735JPA0595	BUTTON,DECK 1	
611	735JPA0596	BUTTON,DECK 2	
612	735JPA0597	BUTTON,DECK 3	
613	735JPA0598	BUTTON,DECK 4	
614	735JPA0599	BUTTON,POWER	
615	800WFA0021	CUSHION,LEG	
616	702JSA0055	CABINET,INSIDE	
617	711WPC0005	BADGE,BRAND	
618	735JPA0600	KNOB,JOG	
619	742JUA0058	SPRING,VOL	
620	704JPA0018	HOLDER,TRANS	
621	712JPJ0559	FLAP,MD	
622	713JRN0001	SHEET,COVER	
623	724JNA0005	SHEET,PVC	5x10xT0.3
624	742JUA0056	SPRING,MD	
625	759JNA0006	SHEET,FFC	
626	761JSA0327	ANGLE,TOP	
627	800JFA0042	CUSHION	10x25xT5
628	800JFA0043	CUSHION	25x25xT8
629	800JF00166	CUSHION-A	
630	801JRO0002	DAMPER,MD	
631	702JSA0053	CABINET,TOP	
632	713JPJ0067	DOOR,CD	
633	7222022459	SHEET,RATING	
634	7230006733	SHEET,JACK	
701	788JSE0020	TAPPING (B0) TRUSS	4x10
702	8107140C24	SCREW,TAP TITE(S) PAN	4x32
703	8107230604	SCREW,TAP TITE(S) BIND	3x6
704	8107230404	SCREW,TAP TITE(S) BIND	3x4
705	8107220604	SCREW,TAP TITE(S) BIND	2x6
706	8107126504	SCREW,TAP TITE(S)	2.6x5
707	8110230804	SCREW,TAP TITE(P) BIND	3x8
708	8110226A04	SCREW,TAP TITE(P) BIND	2.6x10
709	8110226804	SCREW,TAP TITE(P) BIND	2.6x8
710	810A130A04	SCREW/WASHER(A)	M3x10
---	791JHA0082	GIFT SHEET	
---	792JHA0264	PACKAGE	
---	793JCD2515	GIFT BOX	
---	J1100301	INSTRUCTION BOOK	
---	J1100307	QUICK SET UP SHEET	
---	J2860202	GUARANTEE CARD	

ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	
		RESISTORS	
⚠ R4027	R655U42R2J	R,FUSE	2.2 OHM 1/4W
⚠ R4037	R635812R2J	R,FUSE	2.2 OHM 1W
R4041	R00106225J	RC	2.2M OHM 1/6W
⚠ R7026	R655U4100J	R,FUSE	10 OHM 1/4W
⚠ R7060	R655U2R47J	R,FUSE	0.47 OHM 1/2W
R7064	R00202121J	RC	120 OHM 1/2W
R7065	R00202121J	RC	120 OHM 1/2W
R7068	R00106103J	RC	10K OHM 1/6W
		CAPACITORS	
C506	E52SF3392M	CE	3900 UF 25V
C510	E52SF3123M	CE	0.012 F 25V
C4023	E02L01222M	CE	2200 UF 10V
C4041	P13300223J	CP	0.022 UF 50V
C4044	E02L01222M	CE	2200 UF 10V
C7075	P13300392J	CP	0.0039UF 50V
C7076	P13300392J	CP	0.0039UF 50V
C7077	E02L05010M	CE	1 UF 50V
		DIODES	
⚠ D501	D28T011ES1	DIODE,SILICON	11ES1TA1
⚠ D502	D28TEQS040	DIODE,SCHOTTKY	11EQS04TA1B2
⚠ D503	D28TEQS040	DIODE,SCHOTTKY	11EQS04TA1B2
⚠ D505	D28TEQS040	DIODE,SCHOTTKY	11EQS04TA1B2
⚠ D506	D28TEQS040	DIODE,SCHOTTKY	11EQS04TA1B2
⚠ D507	D1VT001330	DIODE,SILICON	1SS133T-77
⚠ D508	D28T011E10	DIODE,SILICON	11E1TA1B2
⚠ D509	D28T011E10	DIODE,SILICON	11E1TA1B2
⚠ D510	D28T011E10	DIODE,SILICON	11E1TA1B2
⚠ D511	D28T011E10	DIODE,SILICON	11E1TA1B2
D1001	DD3RLFB01L	DIODE,SILICON	LFB-01L
D1002	DD3RLFB01L	DIODE,SILICON	LFB-01L
D1003	0021320220	LED	SLP-9118C-51H-S-T1
D7001	D97U06R81B	DIODE,ZENER	MTZJ6.8B T-77
D7002	D97U06R81B	DIODE,ZENER	MTZJ6.8B T-77
D7003	D97U01301B	DIODE,ZENER	MTZJ13B T-77
D7004	D97U01301B	DIODE,ZENER	MTZJ13B T-77
D7005	D1VT001330	DIODE,SILICON	1SS133T-77
D7006	D1VT001330	DIODE,SILICON	1SS133T-77
D7007	D1VT001330	DIODE,SILICON	1SS133T-77
D7008	D1VT001330	DIODE,SILICON	1SS133T-77
D7009	D1VT001330	DIODE,SILICON	1SS133T-77
D7010	D1VT001330	DIODE,SILICON	1SS133T-77
D7011	D28T011E10	DIODE,SILICON	11E1TA1B2
D7012	D97U01301B	DIODE,ZENER	MTZJ13B T-77
D7013	D97U06R81B	DIODE,ZENER	MTZJ6.8B T-77
D7014	D92T1270B0	DIODE,ZENER	RD27FB-T7
D7016	D28T011ES1	DIODE,SILICON	11ES1TA1
D7017	D1VT001330	DIODE,SILICON	1SS133T-77
		ICS	
⚠ IC501	I07K9A05T0	IC	BA05T
⚠ IC502	I0QK98M090	IC	NJM78M09FA
⚠ IC504	I07K9A05T0	IC	BA05T
IC1001	I0UJ0T600I	IC	PST600IMT
IC1002	I51K08069A	IC	OEC8069A
IC4001	I01FV87800	IC	AN8780SB
IC4002	I01FV88060	IC	AN8806SB
IC4003	I07S064180	IC	BA6418N
IC4004	I53F0X2440	IC	TC74LCX244F-(EL)
IC4005	I01FV27410	IC	MN662741RHM
IC4006	I53F0T2440	IC	TC74HCT244AF-TP1
IC7001	I03S071510	IC	LA7151
IC7002	I0QF045800	IC	NJM4580M
IC7003	I53F0C1530	IC	TC74HC153AF(EL)
IC7004	IC1F045120	IC	AK4512VF-E2
IC7005	I0UJ0T600K	IC	PST600KMT
⚠ IC7006	I07F0A0330	IC	BA033FP
		TRANSISTORS	
Q1001	TPYJC05001	COMPOUND TRANSISTOR	DTA124EKAT146
Q1002	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q4001	TA5T009504	TRANSISTOR,SILICON	2SA950Y(TPE2)
⚠ Q7001	TB3T006980	TRANSISTOR,SILICON	2SB698-AA
Q7002	TNYJD05002	COMPOUND TRANSISTOR	DTC144TKAT146
⚠ Q7003	TB3T009260	TRANSISTOR,SILICON	2SB926(S,T)-AA
Q7004	TNYJD05002	COMPOUND TRANSISTOR	DTC144TKAT146
⚠ Q7005	TB3T009260	TRANSISTOR,SILICON	2SB926(S,T)-AA
Q7006	TNYJD05002	COMPOUND TRANSISTOR	DTC144TKAT146
Q7007	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q7008	TNYJD05002	COMPOUND TRANSISTOR	DTC144TKAT146

REF. NO.	PART NO.	DESCRIPTION	
		TRANSISTORS	
Q7009	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q7010	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q7011	TPYJC05001	COMPOUND TRANSISTOR	DTA124EKAT146
Q7012	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
⚠ Q7014	TD3T008630	TRANSISTOR,SILICON	2SD863(E,F)-AE
Q7015	T6YJ1037K0	TRANSISTOR,SILICON	2SA1037AKT146R,S
Q7016	TNYJD05002	COMPOUND TRANSISTOR	DTC144TKAT146
Q7017	TNYJC05001	COMPOUND TRANSISTOR	DTC124EKAT146
		COILS &TRANSFORMERS	
L501	02AEB1A2E1	CORE FERRITE	E2115JRT
L7001	0216S1470J	COIL	47 UH
L7002	0216S1470J	COIL	47 UH
L7005	021673102J	COIL	1 MH
L7006	021673102J	COIL	1 MH
⚠ T501	0406540036	TRANSFOR,POWER AC	0654003
		JACK	
J7001	0607451003	JACK,RCA	LPR6520-7003
		SWITCHES	
SW1001	0504201T32	SWITCH,TACT	SKQNAE052A
SW1002	0504201T32	SWITCH,TACT	SKQNAE052A
SW1003	0504201T32	SWITCH,TACT	SKQNAE052A
SW1004	0504201T32	SWITCH,TACT	SKQNAE052A
SW1005	0504201T32	SWITCH,TACT	SKQNAE052A
SW1006	0504201T32	SWITCH,TACT	SKQNAE052A
SW1007	0504201T32	SWITCH,TACT	SKQNAE052A
SW1008	0504201T32	SWITCH,TACT	SKQNAE052A
SW1009	0504201T32	SWITCH,TACT	SKQNAE052A
SW1010	0504201T32	SWITCH,TACT	SKQNAE052A
SW1011	0504201T32	SWITCH,TACT	SKQNAE052A
SW1012	0504201T32	SWITCH,TACT	SKQNAE052A
SW1013	0504201T32	SWITCH,TACT	SKQNAE052A
SW1014	0504201T32	SWITCH,TACT	SKQNAE052A
SW1015	0504201T32	SWITCH,TACT	SKQNAE052A
SW1016	0520221001	SWITCH	EC12E24204
		P.C.BOARD ASSEMBLIES	
PCB010	A11003A01A	PCB A'SSY	PM8001A
PCB020	A11003A02A	PCB A'SSY	PP8001A
PCB030	A11003A03A	PCB A'SSY	PE8001A
PCB040	A11003A04A	PCB A'SSY	PE8003A
		MISCELLANEOUS	
B7003	024AC14015	CORE,BEADS (CHIP)	BLM31A601SPT
B7004	024AC14015	CORE,BEADS (CHIP)	BLM31A601SPT
B7005	024AC14015	CORE,BEADS (CHIP)	BLM31A601SPT
B7006	024AC14015	CORE,BEADS (CHIP)	BLM31A601SPT
BT001	1411004012	BATTERY,MANGAN	R03USN/2ST
CD001	06CNB90001	CORD,RCA PIN	AV-2A2A-06
CD002	06CNB90001	CORD,RCA PIN	AV-2A2A-06
⚠ CD501	1206655814	CORD,AC BUSH	06655814
CD502	06CP19002A	CORD,CONNECTOR	CP19002A
CD503	068M01407A	CORD,CONNECTOR	8M01407A
CP501	0694430100	CORD,UX CONNECTOR	2-173270-3
CP502	069W190019	CONNECTOR PCB SIDE	TID-X09P-B2
CP503	069M01001A	CONNECTOR PCB SIDE	003P-2100
CD1001	068101388A	CORD,EIS CONNECTOR	8101388A
CD1003	068101401A	CORD,EIS CONNECTOR	8101401A
CD4001	06CP2B109A	CORD,CONNECTOR	CP2B109A
CD4003	12210G3201	CORD,JUMPER	210G3201
CD4004	068101378A	CORD,EIS CONNECTOR	8101378A
CD4005	068101378A	CORD,EIS CONNECTOR	8101378A
CD4006	068101428A	CORD,CONNECTOR	8101428A
CD7002	12210V1801	CORD,JUMPER	210V1801
CD7003	12210O3001	CORD,JUMPER	210O3001
CD7004	06CPX4003A	CORD,CONNECTOR	CPX4003A
CP1001	0695VV0120	CONNECTOR PCB SIDE	HLW31R-2C7
CP4001	069X2B0119	CONNECTOR PCB SIDE	B11B-PH-K
CP4003	0695VG0130	CONNECTOR PCB SIDE	SLW16R-1C7
CP7002	0695VV0110	CONNECTOR PCB SIDE	HLW31S-2C7
CP7003	0695VO0120	CONNECTOR PCB SIDE	HLW24R-2C7
CP7004	069X240509	CONNECTOR PCB SIDE	S4B-PH-K-S
CUS011	800JF00166	CUSHION-A	
CUS012	800JF00204	CUSHION-C	
CX1002	069J240610	CONNECTOR,PCB-PCB	IMSA-9176B-04L-T
CY1002	069J240310	CONNECTOR PCB SIDE	IMSA-9110S-04L
⚠ DK4001	167D211201	DECK CD	KSL-2130CCM
⚠ DK7001	16A600005A	DECK MD	DYMC2Z202A
⚠ F501	080PT1R602	FUSE	21801.6
FH501	06710T0006	HOLDER,FUSE	EYF-52BC

ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION			
		MISCELLANEOUS			
FH502	06710T0006	HOLDER,FUSE		EYF-52BC	
⚠ ICP503	083PC04002	MICRO FUSE		251004	
OS1001	0779000012	REMOTE RECEIVER		GP1U271R	or
	077Q000017	REMOTE RECEIVER		PIC-28143TH5	
OS7001	07AE000002	TRANSMITTER		TOTX178	
OS7002	07AE100001	RECIEVER		TORX178A	
TM101	076R0CB010	TRANSMITTER		R25-0936	
V1001	09678CR201	TUBE FLUORSCENT DISPLAY		13-ST-34GK	
X1001	100CT8R005	CRYSTAL	HC-49/U-S	8MHz	
X4001	100CT01604	CRYSTAL	HC-49/U-S	16.9344MHz	

RESISTOR

RC..... CARBON RESISTOR

CAPACITORS

CC..... CERAMIC CAPACITOR
CE..... ALUMI ELECTROLYTIC CAPACITOR
CP..... POLYESTER CAPACITOR
CPP..... POLYPROPYLENE CAPACITOR
CPL..... PLASTIC CAPACITOR
CMP..... METAL POLYESTER CAPACITOR
CMPL..... METAL PLASTIC CAPACITOR
CMPP..... METAL POLYPROPYLENE CAPACITOR

SPEC.NO.	M110-03A
O/R NO.	J8X1001